REMARKS

Objections

The Office Action objected to the application because of alterations which were not initialed and/or dated as required by 37 CFR 1.52(c). The Office Action required an oath or declaration that identifies the application by application number and filing date. Applicant's attorney, Ken Smith, called examiner Nicholson on June 27, 2005 and explained that a Declaration of Inventorship that identified the application by serial number and filing date was filed on March 25, 2004. Examiner Nicholson indicated that he was no longer handling the application. Examiner Nicholson also indicated that if a Declaration of Inventorship that identified the application by serial number and filing date was filed after the filing of the application, a new declaration should not be required. Applicant respectfully submits that a new declaration is not required, since a properly executed Declaration of Inventorship that identified the application by serial number and filing date was filed on March 25, 2004.

Claim Rejections - 35 USC § 112

Claims 9 and 34 were objected to because they included hand-written alterations. Claims 9 and 34 are presented above without hand-written alterations. Applicant respectfully submits that claims 9 and 34 are definite.

The Office Action objected to claim 7 as being indefinite. The Office Action stated that it is unclear how the bore portion is convex or where the bore portion is found in the drawings. Claim 7 has been amended to clarify that radial compression of the bore portion produces a convex surface. Example of such convex surfaces are identified by reference characters 96 and 308a in the drawings. Applicant respectfully submits that amended claim 7 is definite.

Claim Rejections - 35 USC § 102 and 103

The Office Action rejected claims 1-4, 16-18, 27, 30 and 51 as being anticipated by U.S. patent number 2,152,537 to Couty. The Office Action rejected claims 1-8, 11-25, 27-29 and 52 as being unpatentable over U.S. patent number 4,556,242 to Kowal et al. in view of Couty. The Office Action rejected claims 9, 10, 26, 31, 32, 60, and 61 as being unpatentable over Kowal et al., in view of Couty, and further in view of U.S. patent number 3,893,716 to Moreiras et al. The Office Action rejected claim 33 as being unpatentable over Kowal et al., in view of Couty, in view of Moreieras et al., and further in view of U.S. patent number 5,934, 714 to Sugiyama et al. The Office Action rejected claims 34-44 as being unpatentable over Kowal et al., in view of

Moreiras et al. The Office Action rejected claim 59 as being unpatentable over Kowal et al., in view of Moreiras t al., and further in view of Sugiyama et al.

Claim 1

Claim 1 has been amended to make it clear that the fitting recited by claim 1 is a metal tubing fitting. Applicant respectfully submits that amended claim 1 is not anticipated by Couty, because claim 1 includes features that are not shown or suggested by Couty. For example, Couty does not disclose or suggest a metal tube fitting. The Couty fitting is used to provide "attachment for an air hose of resilient material such as rubber," not metal tube. Couty, col. 1, lines 3-6. In addition, there is no suggestion or motivation in Couty to use the disclosed camming angles, that are suitable for rubber hose, in a metal tube fitting. Amended claim 1 is not anticipated by Couty.

Applicant respectfully submits that amended claim 1 is not obvious in view of Kowal et al. in view of Couty, because there is no motivation to combine Kowal et al. and Couty to provide a camming surface having an angle disclosed by Couty in a metal tube fitting. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. MPEP 2143.01 The Office Action states that it "would have been obvious to one having skill in the art at the time the invention was made to fabricate the camming surface angle 28 of Kowal et al. to be at an angle of between 30 and 45 degrees such as taught by Couty, *in order to provide a more secure coupling for the inserted tube due by optimizing the resultant compressive forces between the ferrule and the camming surface.*" (emphasis added) Office Action, pages 5-6. Changing the camming angle greatly affects many factors of a tube fitting, such as tube grip, seal integrity and deformation of the tube. Applicant respectfully points out that the references do not explicitly or implicitly suggest that that an angle of between 30 and 45 degrees would enhance the fitting of Kowal in any way. Applicant also respectfully points out that the Office Action provides no factual basis for the assertion that an angle of between 30 and 45 degrees would provide a more secure coupling for an inserted metal tube by optimizing the compressive forces between the ferrule and the camming surface. See *In re Lee,* 277 F.3d 1338, 1342-44, 61 USPQ2d 1430, 1433-34 (Fed. Cir. 2002) (discussing the importance of relying on objective evidence and making specific factual findings with respect to the motivation to combine references). Applicant respectfully submits

that the combination of Kowal et al. and Couty is "hindsight" because motivation to combine these references is lacking in the references and the knowledge generally available to those skilled in the art. MPEP 2145.

Applicant also respectfully points out that Applicant's specification explains that shallow camming angles of between ten and twenty degrees are employed in prior art fittings for metal tubes, such as stainless steel tubes. Specification, page 4, line 32 - page 5, line 15. A camming angle between ten and twenty degrees provided the mechanical advantage required to create an adequate bite for tube grip of a metal tube. Id. The mechanical advantage provided by the claimed camming angle of at least about thirty-five degrees to about sixty degrees is significantly less than the mechanical advantage provided by a prior art metal fitting camming angle between ten and twenty degrees. The higher mechanical advantage motivates those skilled in the art to employ camming angles between ten and twenty degrees, not thirty-five to sixty degrees in fittings for metal tubes. For example, the Parker-Hannifin CPI fitting line employs about a twenty degree camming angle, the Emeto GmbH EO fitting line employs a twelve degree camming angle, and even the fitting for metal tube shown in Kowal et al. uses a very shallow camming angle. To the contrary, the Office Action has presented no objective evidence to support its assertion that those skilled in the art have motivation to employ a camming angle of between 30 and 45 degrees in a metal tube fitting. Claim 1 is in condition for allowance.

Claims 2-27 depend from claim 1 and are and are also in condition for allowance.

Claim 28

Claim 28 has been amended to clarify that the claimed tube is a metal tubing fitting. Applicant respectfully submits that amended claim 28 is not obvious in view of Kowal et al. in view of Couty, because there is no motivation to provide a camming surface having an included angle of about forty-five degrees in the fitting disclosed by Kowal et al. The fitting disclosed by Couty is a fitting for rubber hose. There is no motivation to use a camming surface angle that is suitable for rubber hose in a fitting for metal tube. Claim 28 is in condition for allowance.

Claim 29 depends from claim 28 and is also in condition for allowance.

Claim 30

Claim 30 has been amended to clarify that the claimed tube is a metal tubing fitting. Amended claim 30 is not anticipated by Couty, because amended claim 30 includes features that are not disclosed by Couty. For example, Couty does not disclose a metal tube received in a fitting body or a ferrule with an interior wall that is radially compressed inward at a location

axially adjacent the indented front edge with a compressive stress that decreases in a generally axial direction away from the front edge. Claim 30 is in condition for allowance.

Claim 31

Claim 31 features a tube fitting for metal tubing. Kowal et al., Couty, and Moreiras do not render amended claim 31 obvious, because claim 31 includes features that are not shown or suggested by these patents. For example, Kowel et al., Couty, and Moreiras do not disclose or suggest a ferrule that is at least 3.3 times harder than the tube end on the Vickers scale. The Office Action cited the following paragraph from Moreiras:

> **"The tube 11 in the preferred embodiment is cylindrical and is a low carbon steel having a hardness of below 20 on the Rockwell C scale. The tube fitting will also work well with other tube materials including annealed stainless steel and cold drawn steel tubing, but the hardness of the tube must be less than the hardness of the cutting edges of the rear sleeve 14 and of the front sleeve 15 by a hardness difference of at least 15 points on the Rockwell C scale and preferably greater"**

Applicant respectfully submits that this passage does not disclose or suggest a ferrule that is at least 3.3 times harder than the tube end on the Vickers scale. A hardness differential of 15 Rockwell C (15 Rc) is not close to the claimed Vickers hardness ratio of at least 3.3. 20 Rc is about 240Hv (Vickers hardness). 35 Rc is about 350Hv. As a result, the hardness ratio disclosed by Moreiras is less than 1.5. Tubing hardness below 20 Rc is not measured on the Rc scale. The measurement jumps over to the Rockwell B scale, which decreases from 100 Rb. Moreiras does not disclose or suggest a ferrule that is at least 3.3 times harder than a metal tube end on the Vickers scale. Claim 31 is in condition for allowance.

Claims 32, 33, 60 and 61 depend from claim 31 and are also in condition for allowance.

Claim 34

Claim 34 features a tube fitting for metal tubing. Kowal et al. and Moreiras et al. do not render claim 34 obvious, because claim 34 recites features that are not shown or suggested Kowal et al. or Moreiras et al. For example, Kowal et al. and Moreiras et al. do not disclose or suggest a ferrule that is at least 3.3 times harder than the tube end on the Vickers scale. Claim 34 is in condition for allowance.

Claim 35 depends from claim 34 and is also in condition for allowance.

Claim 36 depends from claim 34 and further recites that the camming surface is about forty degrees to about fifty degrees and said driven surface is convex. The Kowal et al. and the

Moreiras et al. patents do not show or suggest a camming surface angel of about forty to forty-five degrees. Claim 36 is in condition for allowance.

Claims 37-44 depend from claim 34 and are also in condition for allowance.

Claim 46 depends from claim 34 and further recites that the threaded connection comprises acme threads. Kowal et al. and Moreiras et al. do not show or suggest a fitting for metal tube that includes acme threads. Claim 46 is in condition for allowance.

Claims 47-49 and 59 depend from claim 34 and also in condition for allowance.

Claim 51

Claim 51 features a flareless tube fitting. The fitting includes a first fitting component threadably joinable to a second fitting component. At least one ferrule is contained within a cavity defined by the joined components. The threaded connection has acme threads.

Claim 51 is not anticipated by Couty, because Couty does not disclose or suggest a fitting with acme threads. Claim 51 is in condition for allowance.

Claim 52 depends from claim 51 and is also in condition for allowance.

New Claims

Claims 62-64 have been added. Applicant respectfully submits that new claims 62-64 are in condition for allowance.